

Integrated Water Quality and Aquatic Communities Protocol – Wadeable Streams

Appendix N: Job Hazard Analysis

Draft Version 1.0

Revision History Log:

Previous Version	Revision Date	Author	Changes Made	Reason for Change	New Version

This appendix contains the job hazard analyses for the protocol. As a part of training of new field crews, these specific hazards will be related to the crews, and signed off. This does not replace Appendix C: USGS Safety Manual, Chapter A9, but is meant to codify and establish a method of insuring coverage of safety issues with the crew. *The crew must still read and be responsible for the material in Appendix C.*

JOB HAZARD ANALYSIS (JHA)		Date: 6 November 2009	<input checked="checked" type="checkbox"/> New JHA <input type="checkbox"/> Revised JHA
Park Unit: KLMN	Division:	Branch:	Location: Ashland, Oregon
TASK TITLE: Driving KLMN vehicles or personal vehicles in the course of one's job.		JHA Number: KLMN JHA 1	Page __1__ of __4__
Job Performed By: All	Analysis By: Eric Dinger	Supervisor:	Approved By:
Required Standards and General Notes:	Employees driving as part of their duties must have a valid state issued driver's license.		
Required Training:	Standard drivers training; need to know how to change tires.		
Required Personal Protective Equipment:	Seat belts must be used.		
Tools and Equipment:			
Sequence of Job Steps		Potential Hazards	Safe Action or Procedure
Starting vehicle, basic operation		<ul style="list-style-type: none"> Lights not functioning, visibility impaired. Brakes non-functional. Low tire pressure. Low fluid levels. Spare tire not in vehicle or deflated. Low gas. 	BEFORE DRIVING: <ul style="list-style-type: none"> Test headlights, turn signals, brake lights before leaving site. Test brakes. Test for tire pressure in all four tires. Check fluid levels. Check status of spare; ensure that jack, properly sized lug wrench, and all necessary tools are present in vehicle. Check gas.

JHA - CONTINUATION SHEET		JHA Number: KLMN JHA 1	Page <u> 2 </u> of <u> 4 </u>
Sequence of Job Steps	Potential Hazards	Safe Action or Procedure	
Using 4 wheel drive, if applicable.	<ul style="list-style-type: none"> • Not knowing how to engage, getting stuck in the field. • Unsafe driving procedures due to perceived safety of 4 wheel drive. 	<ul style="list-style-type: none"> • Practice engaging 4 wheel drive. • Engage 4 wheel drive prior to rough conditions. • Use 4 wheel drive when: slippery conditions, increased traction necessary; e.g., steep slopes, slick conditions, snow. • Note that 4 wheel drive increases traction and some control – BUT DOES NOT HELP THE VEHICLE STOP. • Even in 4 wheel drive, use common sense and defensive driving practices. 	
Driving in reverse	<ul style="list-style-type: none"> • Hitting objects, people, wildlife. 	<ul style="list-style-type: none"> • Check area behind vehicle prior to leaving site. • Use a person outside the vehicle (other crew member) to direct traffic. • Back into parking spots, so leaving sites after long field day is easier. 	
Transporting gear and heavy equipment	<ul style="list-style-type: none"> • Gear flying around, hitting driver and passenger in accident. • Damage to gear during turns or stops. 	<ul style="list-style-type: none"> • Ensure that gear is adequately stowed. • If the gear comes with protective gear (e.g., electrofisher; properly stow in container). • Do not put gear on top of vehicle; stow inside. 	
Passenger/driver safety	<ul style="list-style-type: none"> • Distracted driving. 	<ul style="list-style-type: none"> • Wear seatbelts at all times while driving. • Practice safe and defensive driving habits. • Obey traffic laws. • Do not text or talk on cell phones. • Clean the windshields; check for windshield fluid. • Drive with both hands on the wheel. • Do not pick up hitch hikers. • Use turn signals/indicators. • Know, in advance, where you are going. • Make sure seat and mirrors are properly adjusted for driver. • Use headlights, even during daytime driving. 	

JHA - CONTINUATION SHEET		JHA Number: KLMN JHA 1	Page __3__ of __4__
Sequence of Job Steps	Potential Hazards	Safe Action or Procedure	
	<ul style="list-style-type: none"> Driving on narrow, single lane roads with bumpy or “washboard” surfaces. Driving with limited visibility, as in heavy rain, fog, or dust. Road obstacles. Fatigue driving. Storm conditions (snow, mud, wind). Logging truck traffic. 	<ul style="list-style-type: none"> Maintain a safe speed (this may be <i>below</i> the legal limit). Stay to the right, especially on curves, and be aware for oncoming traffic. If turning around, “face the danger,” in other words, turn towards a steep slope, instead of backing into a steep slope cliff. Keep windshield cleaner fluid full. Slow down. If necessary, wait for hazard to pass. Drive with lights on; in some conditions, low lights may penetrate better than brights. Get out and move rocks in the road as necessary, if large amounts of rockfall or trees, report to the park staff. If you hit rocks, stop and check tire conditions (wear, sidewall, and inflation) for damage. If obstacle is an animal, slow down! Be aware of high animal traffic areas and drive appropriately. It is better to “ride out” an impact, rather than a sudden swerve – DO NOT SWERVE. This is true for animals of all sizes, from squirrels to cattle. Be aware of signs of fatigue. Pull over and catnap if necessary, eat a snack, or have a partner drive. If in doubt, do not drive. Keep informed of the weather (see radio SOP). If excess wind (tree top swaying, twigs falling), consider postponing trip. Avoid wet clay roads as much as possible. Drive with windows down, with radio off, listening for oncoming truck brakes (jake brake). 	

JHA - CONTINUATION SHEET	JHA Number: KLMN JHA 1	Page __4__ of __4__
Text Description of Task When it is Done Safely		
<p>Crew returns safe from the field day/season, with no injuries, damages, or law suit.</p>		

Authorized Employee Information			
Employee ID	Last Name	First Name	Qualifications/Remarks

JOB HAZARD ANALYSIS (JHA)		Date: 6 November 2009	<input checked="" type="checkbox"/> New JHA <input type="checkbox"/> Revised JHA
Park Unit:KLMN	Division:	Branch:	Location: Ashland, OR
TASK TITLE: Remote field site access/ trail travel/ cross-country travel		JHA Number: KLMN JHA 2	Page __1__ of __3__
Job Performed By: Field Crews	Analysis By: Eric Dinger	Supervisor:	Approved By:
Required Standards and General Notes:	Crew members should be physically fit, and okayed by a medical professional for hard strenuous work		
Required Training:	None required.		
Required and/or Recommend Personal Protective Equipment:	Footwear appropriate to terrain (probably hiking boots); pants if hiking through brush or poison oak; Tec-nu poison oak wash, park radio with charged batteries, cell phones; maps; GPS units, safety glass, first aid kit.		
Tools and Equipment:	Appropriate backpacks		
Sequence of Job Steps		Potential Hazards	Safe Action or Procedure
Hiking on trails		<ul style="list-style-type: none"> Getting lost. Physical injury (e.g., twisted ankle, broken bones). 	<ul style="list-style-type: none"> Use and be trained in navigation techniques using both maps and GPS units. Allow ample time to access site and return. Bring safety gear (e.g., radio); extra clothes, water, food, etc. Look at notes from crews that previously accessed this site. Wear appropriate footwear, preferably boots with vibram soles and tops above the ankle, broken in prior to field season. Walk cautiously and don't run. Take breather breaks as necessary. Stay physically fit. Know basic first aid. Be trained in radio SOP. Avoid talus slopes. On steep slopes, avoid walking directly below others. Take care walking on wet or slippery ground, especially bridges.

JHA - CONTINUATION SHEET		JHA Number: KLMN JHA 2	Page __2__ of __3__
Sequence of Job Steps	Potential Hazards	Safe Action or Procedure	
Off-trail travel	<ul style="list-style-type: none"> • Hitting fellow crew member with tool, implement, or vegetation branch. • Carrying heavy loads. • Loose footing; falls, broken bones, etc. • Branches and trees, other dangerous obstacles. 	<ul style="list-style-type: none"> • Maintain 6 foot spacing. • Warn people behind of “snap-back” from vegetation branches; wear safety glasses (or other glasses). • Use backpack appropriate to load; do not carry heavy items in arms or hands – make hands available to break a fall. • Properly fit backpack. • Use crew member to assist in putting pack on. • Be physically fit. • Report problems or issues to supervisor. • Stay hydrated. • Avoid steep slopes. • If unavoidable, walk at angle up slope; not straight up. • Wear good boots. • Do not go up hazardous slopes. • Watch for branches, wet, slick rocks, etc. Avoid as necessary. • Take your time, ascending and descending. • Plan your route so that hazardous terrain is minimized, and the use of trails is maximized. • Do not travel alone – e.g., if one crew member is faster, only travel as fast as your slowest person. • Examine for the safest way around. • Do not jump off trees. • Avoid going underneath large trees that could shift and crush a person. 	

JHA - CONTINUATION SHEET	JHA Number: KLMN JHA 2	Page __3__ of __3__
Text Description of Task When it is Done Safely		
Crew returns safe from the field day/season, with no injuries, damages, or law suit.		

Authorized Employee Information			
Employee ID	Last Name	First Name	Qualifications/Remarks

JOB HAZARD ANALYSIS (JHA)		Date: 6 November 2009	<input checked="checked" type="checkbox"/> New JHA <input type="checkbox"/> Revised JHA
Park Unit: KLMN	Division:	Branch:	Location: Ashland, OR
TASK TITLE: Field work - Environmental Exposure		JHA Number: KLMN JHA 3	Page <u> 1 </u> of <u> 3 </u>
Job Performed By: Field Crews	Analysis By: Eric Dinger	Supervisor:	Approved By:
Required Standards and General Notes:	Field crew members in the field are expected to use common sense in dealing with exposure to elements or wildlife. Ideally, they have experience in outdoor work prior to initiating the field season.		
Required Training:	None.		
Required Personal Protective Equipment:	Common sense, appropriate clothing for conditions.		
Tools and Equipment:			
Sequence of Job Steps		Potential Hazards	Safe Action or Procedure
Being outdoors, far from facilities for long time periods		<ul style="list-style-type: none"> Hypothermia. Hyperthermia (heat exhaustion; heat stroke). 	<ul style="list-style-type: none"> Consult First Aid book for treatment. Seek assistance. Recognize the signs: shivering; numbness; drowsiness; muscle weakness; dizziness; nausea; unconsciousness; low, weak pulse; large pupils. Practice prevention – stay dry; wear appropriate clothing; Cotton kills; Wear layers, shed layers as needed – don't overheat – sweat can cause hypothermia; Watch or listen to the weather forecast (see Radio SOP) and plan accordingly; stay hydrated, cover head with warm clothing, stay active. Be aware of the role that wind-chill can play in hypothermia; under certain conditions, hypothermia can occur without any rain or being wet. Consult First Aid book for treatment – but generally get the victim to cooler conditions. NOTE: HEAT STROKE IS A LIFE THREATENING CONDITION. Recognize signs: above normal body temps; headaches, nausea, cramping, fainting, increased heart rate, pale and clammy skin, heavy sweating, etc.

JHA - CONTINUATION SHEET		JHA Number: KLMN JHA 3	Page <u>2</u> of <u>3</u>
Sequence of Job Steps	Potential Hazards	Safe Action or Procedure	
	<ul style="list-style-type: none"> Electrical Storms – lightning. Sunburn. 	<ul style="list-style-type: none"> Practice prevention: Stay hydrated – in the midst of the summer, it may be necessary to drink 1 liter of water per hour; wear a broad brimmed hat; Take rest stops in shade. Watch the sky for signs of thunderstorms, and seek shelter <i>before</i> the weather deteriorates. Stop work in streams and lakes. If caught in electrical storms, seek shelter inside a vehicle or building; keep away from doors and windows, plugged in appliances, and metal. Avoid contact with metal objects in vehicles. Do not use telephones. If outside with no shelter, do not congregate. In case of lightning strike, someone must be able to begin revival techniques (e.g., CPR). Do not use metal objects. Avoid standing near isolated trees. Seek lower elevations such as valleys or canyons – avoid being on peaks and trees. <i>If you feel your hair standing on end and your skin tingling, this is a sign that lightning might be about to strike – crouch immediately (feet together, hands on knees).</i> The risk of sunburn is higher when working at high elevations, or when working around water (from reflection). In these conditions, you can be burned even in overcast conditions. Wear protective clothing and use sunscreen. 	

JHA - CONTINUATION SHEET	JHA Number: KLMN JHA 3	Page __3__ of __3__
Sequence of Job Steps	Potential Hazards	Safe Action or Procedure
	<ul style="list-style-type: none"> • High wind events. • Altitude sickness. • Giardia. 	<ul style="list-style-type: none"> • Severe wind events can create “windthrows” where strong winds can blow down trees, causing hazardous conditions to field personnel – crews should avoid areas during high wind, exhibiting obvious previous wind damage. • Know and recognize signs of “acute mountain sickness:” headaches; light-headedness; unable to catch your breath; nausea, vomiting. • Practice prevention: acclimate to high elevations slowly, stay hydrated. • If symptoms progress, and include: difficulty breathing, chest pain, confusion, decreased consciousness or loss of balance, descend to lower elevations immediately and seek medical attention. • Treat, filter, or boil all drinking water. Do not drink untreated water from streams, lakes, or springs.

JOB HAZARD ANALYSIS (JHA)		Date: 9 November 2009	<input checked="" type="checkbox"/> New JHA <input type="checkbox"/> Revised JHA
Park Unit: KLMN	Division:	Branch:	Location: Ashland, OR
TASK TITLE: Field work - Wildlife encounters		JHA Number: KLMN JHA 4	Page ___ 1 ___ of ___ 3 ___
Job Performed By: Field Crew	Analysis By: Eric Dinger	Supervisor:	Approved By:
Required Standards and General Notes:	None		
Required Training:	None		
Required Personal Protective Equipment:	None		
Tools and Equipment:	None		
Sequence of Job Steps	Potential Hazards	Safe Action or Procedure	
Being in the field	<ul style="list-style-type: none"> Rattlesnakes. Bears. 	<ul style="list-style-type: none"> Be alert – be especially cautious if wearing headphones. Do not put your feet or hands where you cannot see. Do not pick up rattlesnakes. Give a wide berth. Avoid stepping over logs, when you cannot see the other side (see above!). If bitten, seek immediate professional medical attention – send someone for aid. Remove jewelry, lower bitten extremity below heart, cover wound with sterile band while enroute to medical attention. Be alert, stay calm. Work in teams of two to deter bear attacks. If you encounter a bear, give it as much room as possible. Try to leave the area – but DO NOT RUN. Back away slowly, but if the bear follows, stop and hold your ground. Wave your arms, make yourself look big, and talk in a normal voice. 	

Sequence of Job Steps	Potential Hazards	Safe Action or Procedure
	<ul style="list-style-type: none"> • Mountain Lions. • Ticks. • Roughskin newts (<i>Taricha granulosa</i>). • Bee stings. 	<ul style="list-style-type: none"> • If the bear makes contact, surrender! Fall to the ground and play dead. Typically, a bear will break off its attack once it feels the threat has been eliminated. If the bear continues to bite after you assume a defensive posture, the attack is predatory, and you should fight back vigorously. • Be alert, calm, and do not panic. • If you see a mountain lion, do not run; you may stimulate its predatory nature. Shout and wave arms to let it know that you are not prey. FIGHT BACK. • Use DEET based repellants on exposed skin. • Check for ticks during and after field work. • Remove with tweezers within 24 hours, preferably immediately. • DO NOT leave the head imbedded. • DO NOT extract with matches, petroleum jelly, or other coatings (e.g., motor oil). • Avoid handling Roughskin newts; their skin contains a potent neurotoxin. If necessary for the protocol, handle only when wearing gloves. Do not "lick" for "killer buzz." People have died from attempting to eat roughskin newts. • If you know or suspect you are allergic, carry appropriate allergy kits, prescribed by a doctor, for treating anaphylactic shock. Carry and take diphenhydramine (a.k.a. Benadryl), following the label instructions for allergy control. • Inform your supervisor if you suspect you are allergic. • Watch for ground nests.

JHA - CONTINUATION SHEET	JHA Number: KLMN JHA 4	Page <u> 3 </u> of <u> 3 </u>
Text Description of Task When it is Done Safely		
Field crew returns with no injuries or lawsuits.		

Authorized Employee Information			
Employee ID	Last Name	First Name	Qualifications/Remarks

JOB HAZARD ANALYSIS (JHA)		Date: 9 November 2009	<input checked="" type="checkbox"/> New JHA <input type="checkbox"/> Revised JHA
Park Unit: KLMN	Division:	Branch:	Location: Ashland, OR
TASK TITLE: Field Work – plant hazards		JHA Number: KLMN JHA 4	Page <u> 1 </u> of <u> 2 </u>
Job Performed By: Field Crews	Analysis By: Eric Dinger	Supervisor: Daniel Sarr	Approved By:
Required Standards and General Notes:	None		
Required Training:	None		
Required Personal Protective Equipment:	None		
Tools and Equipment:	None		
Sequence of Job Steps	Potential Hazards	Safe Action or Procedure	
Travel, movement or work in area with Poison Oak	<ul style="list-style-type: none"> Allergic reaction to poison oak plants. 	<ul style="list-style-type: none"> Learn to recognize Poison Oak. Avoid contact, wear long pants and long-sleeve shirts if travelling in dense areas. If skin contact is made, flush with cold water as soon as possible. DO NOT flush with warm water or use soap – this can open your pores and increase the reaction. Use Tecnu or similar product to wash and rinse with cold water to remove oils (follow label instructions). 	
Encountering irrigation pipes, marijuana plantation, or grow operations.	<ul style="list-style-type: none"> Unfriendly encounters with criminal elements. 	<ul style="list-style-type: none"> Do not wear uniforms. Carry radio in backpack, not visible. Act like tourists (a.k.a. act dumb). Work in pairs or larger groups. If working in areas likely to contain operations, check in with park staff when leaving vehicle and returning to vehicle. Do not confront strangers. Watch for suspicious vehicles, people and report to rangers. Watch for black piping or other signs. If finding a definite grow operation, LEAVE IMMEDIATELY, note location, and report to park ranger. 	

JHA - CONTINUATION SHEET	JHA Number: KLMN JHA 4	Page <u> 2 </u> of <u> 2 </u>
Text Description of Task When it is Done Safely		
Field crews return safe and sound, with no injuries.		

Authorized Employee Information			
Employee ID	Last Name	First Name	Qualifications/Remarks

JOB HAZARD ANALYSIS (JHA)		Date: 10 November 2009	<input checked="checked" type="checkbox"/> New JHA <input type="checkbox"/> Revised JHA
Park Unit: KLMN	Division:	Branch:	Location: Ashland, OR
TASK TITLE: Water Chemistry preparation work		JHA Number: KLMN JHA 5	Page <u>1</u> of <u>2</u>
Job Performed By: Lakes/Streams Project Lead, Field Crew	Analysis By: Eric Dinger	Supervisor:	Approved By:
Required Standards and General Notes:	None		
Required Training:	Must be trained in KLMN Stream Protocol SOP #1: Preparations, Equipment, and Safety.		
Required Personal Protective Equipment:	Lab coat, fume hood, protective gloves, safety glasses, eyewash stations, emergency showers.		
Tools and Equipment:	Detailed in SOP #1: Preparations, Equipment and Safety.		
Sequence of Job Steps		Potential Hazards	Safe Action or Procedure
Acid washing bottles		<ul style="list-style-type: none"> Acid spills. 	<ul style="list-style-type: none"> Work in a confined area, so that the spill is contained. Be familiar with spill clean-up: Neutralize with baking soda and then wipe up with paper towels. These can be safely disposed in the trash once neutralized. Wear protective gear (gloves, eyewear, and lab coat) in case of spill on body. If skin contact made, flush with running water for 15 minutes. Do not rub or wash. Be familiar with location of eye wash stations and showers. DO NOT wash in areas without these safety items. Use eyewash stations in case of eye contamination. Inform others that you are performing this work, so they can check on you. Use fume hood to control potential acid fumes. Note that the fume hood fan must be turned on, and protective glass lowered as much as possible to properly function.
Muffle furnace to ash filters and dissolved organic carbon bottles		<ul style="list-style-type: none"> Burns from hot glass/filters. 	<ul style="list-style-type: none"> Allow glass to fully cool before touching. Do not pull glass out of furnace before cool – setting on a cold countertop can fracture the glass and pose a safety hazard. When removing or placing bottles/filters to be combusted, use tongs and gloves to protect from burns.

JHA - CONTINUATION SHEET	JHA Number: KLMN JHA 5	Page <u> 2 </u> of <u> 2 </u>
Text Description of Task When it is Done Safely		
Bottles are successfully washed, filters prepped without damage to employees' health or facilities.		

Authorized Employee Information			
Employee ID	Last Name	First Name	Qualifications/Remarks

JOB HAZARD ANALYSIS (JHA)		Date: 10 November 2009	<input checked="" type="checkbox"/> New JHA <input type="checkbox"/> Revised JHA
Park Unit: KLMN	Division:	Branch:	Location: Ashland, OR
TASK TITLE: Field acid neutralizing capacity assays		JHA Number: KLMN JHA 6	Page <u>1</u> of <u>2</u>
Job Performed By: Lakes/streams field crews	Analysis By: Eric Dinger	Supervisor:	Approved By:
Required Standards and General Notes:			
Required Training:	Training in KLMN Streams Protocol, SOP #8: Water Chemistry Sample Collection and Processing.		
Required Personal Protective Equipment:	Protective gloves and protective eyewear		
Tools and Equipment:	Personal protective gear, acid neutralizing test kit		
Sequence of Job Steps	Potential Hazards	Safe Action or Procedure	
Addition of 1.6N or 0.16N Hydrochloric acid to sample container	<ul style="list-style-type: none"> Using the digital titrator, it is possible to spill or inject acid onto ones' self. 	<ul style="list-style-type: none"> Follow the manufacturer's instruction for loading the acid cartridge into the digital titrator. Ensure a proper fit before depressing the plungers. Do not force the titrator. Wear appropriate protective gear: safety glasses and protective gloves (as in latex). In general, point titrator away from one's self when operating. 	

Text Description of Task When it is Done Safely
SOP #8: Water Chemistry Sample Collection and Processing completed with no bodily harm.

Authorized Employee Information			
Employee ID	Last Name	First Name	Qualifications/Remarks

JOB HAZARD ANALYSIS (JHA)		Date: 18 June 2001	<input checked="" type="checkbox"/> New JHA <input type="checkbox"/> Revised JHA
Park Unit: KLMN/REDW	Division:	Branch:	Location: Ashland, OR
TASK TITLE: Electrofishing		JHA Number: KLMN JHA 8	Page <u>1</u> of <u>2</u>
Job Performed By: Streams Field Crews	Analysis By: Baker Holden III / David Anderson	Supervisor:	Approved By:
Required Standards and General Notes:	This covers specific issues that could occur during electrofishing the sample reach.		
Required Training:	Training in Streams Protocol		
Required Personal Protective Equipment:	Chest Waders, Linesmen Gloves; both with no leaks		
Tools and Equipment	As required by Lakes Protocol		
Sequence of Job Steps	Potential Hazards	Safe Action or Procedure	
Electrofishing	<ul style="list-style-type: none"> Electrocution. 	<ul style="list-style-type: none"> Wear proper chest waders, sticky rubbered soled shoes "without any leaks," and polarized glasses. Wear linesmen gloves "without any leaks." Do not put hands in water when shocker is on (even if wearing gloves). Crew should discuss field methods, safety procedures, and communication prior to beginning electrofishing. All people must be CPR and First Aid Certified. 	

JHA - CONTINUATION SHEET	JHA Number: KLMN JHA 8	Page <u> 2 </u> of <u> 2 </u>
Text Description of Task When it is Done Safely		
Vertebrate Survey accomplished with no harm to crew.		

Authorized Employee Information			
Employee ID	Last Name	First Name	Qualifications/Remarks